



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: Chen et al. Examiner: Nguyen, Ha T  
Serial No.: 10/826,288 Group Art Unit: 2812  
Filed: April 19, 2004 Docket No.: 200308991-1  
Title: SELF-ALIGNED COATING ON RELEASED MEMS

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**APPEAL BRIEF UNDER 37 C.F.R. §41.37**

**Mail Stop Appeal Brief – Patents**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir/Madam:

This Appeal Brief is submitted in support of the Notice of Appeal filed on August 10, 2006, appealing the final rejection of claims 1-18 of the above-identified application as set forth in the Final Office Action mailed May 10, 2006.

The U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No. 08-2025 in the amount of \$500.00 for filing a Brief in Support of an Appeal as set forth under 37 C.F.R. §41.20(b)(2). At any time during the pendency of this application, please charge any required fees or credit any overpayment to Deposit Account No. 08-2025.

Appellant respectfully requests consideration and reversal of the Examiner's rejection of pending claims 1-18.

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**REAL PARTY IN INTEREST**

The real party in interest is Hewlett-Packard Development Company, LP having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

**RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to Appellant that will have a bearing on the Board's decision in the present Appeal.

**STATUS OF CLAIMS**

In a Final Office Action mailed May 10, 2006, claims 1-18 were finally rejected. Claims 19-36 and 41-41 were previously withdrawn. Claims 37-40 were canceled. Claims 1-18 are pending in the application, and are the subject of the present Appeal.

**STATUS OF AMENDMENTS**

No amendments have been entered subsequent to the Final Office Action mailed May 10, 2006. No Response After Final was filed and no amendments to the claims were proposed by Appellants or entered by the Examiner.

**SUMMARY OF THE CLAIMED SUBJECT MATTER**

The Summary is set forth as an exemplary embodiment as the language corresponding to independent claim 1. Discussions about elements of claim 1 can be found at least at the cited locations in the specification and drawings.

The present invention, as claimed in independent claim 1, provides a method of making a microelectromechanical system device. The method includes releasing a micromover component and coating the micromover component with a first self-aligned film after releasing the micromover component. (See, e.g., specification at page 4, paragraph 16 –

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page 6, paragraph 22; Figures 3A, 3B and 4-7; reference numbers 100, 110, 120, 130, 135, 150, 185 and 190.

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

- i. Claims 1-8, 11-15 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Speakman (USPN 6503831).
- ii. Claims 9-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Speakman in view of Yao et al. (USPN 6617657).
- iii. Claims 16-17 are rejected under 35 U.S.C. §103(a) as being unpatentable over Speakman in view of Jacobson et al. (USPN 6587408)

**ARGUMENT**

**I. The Applicable Law**

When making an obvious rejection under 35 U.S.C. § 103, a necessary condition is that the combination of the cited references must teach or suggest all claim limitations. If the cited references do not teach or suggest every element of the claimed invention, then the cited references fail to render obvious the claimed invention, i.e. the claimed invention is distinguishable over the combination of the cited references.

Additionally, for reference structures to be properly combined and thereby render a claimed invention obvious, there must be some motivation for the combination i.e. there must be some teaching, suggestion, or incentive to make the combination claimed by the appellant. *Northern Telecom, Inc. v. Datapoint Corp.* 15 USPQ2d 1321, 1323 (CAFC 1990).

***Motivation coming from the appellant's own disclosure is not sufficient.*** Nor is it sufficient that those of ordinary skill in the art had the capability to combine the referenced structure or understood the advantages of the combination. Although an Examiner may suggest that the structure of a primary prior art reference *could* be modified in view of a secondary prior art reference to form the claimed structure, the mere fact that the prior art *could* be so modified does not make the modification obvious ***unless the prior art suggested the desirability of the modification.*** *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (CAFC 1989). (Emphasis added.)

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**II. Rejection of Claims 1-8, 11-15 and 18 under 35 U.S.C. §103(a) as being unpatentable over Speakman (USPN 6503831).**

The Examiner rejected claims 1-8, 11-15 and 18 under 35 U.S.C. §103(a) as being unpatentable over Speakman (USPN 6503831). Appellants respectfully submit that Hicken does not teach or suggest the invention of independent claims 1, 12, 17, and 20, and the claims depending therefrom.

**A. Rejection of Claims 1-8, 11-15 and 18 under 35 U.S.C. §103(a) as being unpatentable over Speakman.**

Independent claim 1 recites a method of making a microelectromechanical system device. The method includes releasing a micromover component and coating the micromover component with a first self-aligned film after releasing the micromover component. Speakman does not disclose, teach, suggest or otherwise provide motivation for “coating the micromover component with a first self-aligned film after releasing the micromover component”.

With respect to independent claim 1, the Examiner stated that:

Referring to Figs 20 and related text, Speakman discloses [Re claim 1] a method of making a microelectromechanical system device comprising: releasing a micromover component 1302, note that this step has to be performed for the micromover to be as shown; and coating the micromover component with a first self-aligned film after releasing the micromover component....

Appellant respectfully disagrees and asserts that Speakman does not disclose, teach, suggest or otherwise provide motivation for “coating the micromover component with a first self-aligned film after releasing the micromover component”. According to Speakman, Figure 20 “illustrates a piezoelectric thin 1300 deposited on to a SiO<sub>2</sub> or Is cantilever 1302. The film 1300 is used to oscillate the cantilever 1302, which deflects into or away from a dielectric or air gap 1304. Assuming arguendo that the cantilever is a micromover component, the film 1300 in Speakman appears to be on the cantilever before it would ever move. The film is used to oscillate the cantilever so presumably if it is causing the movement of the cantilever, as Speakman does not address when the film 1300 is applied to the

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cantilever, it is on the cantilever before it would move or be released. Consequently, there is no disclosure or teaching and much less a suggestion or motivation provided for “coating the micromover component with a first self-aligned film *after* releasing the micromover component”.

With respect to Appellants argument 1, the Examiner stated that:

Even though Speakman does not expressly disclose when the film 1300 is deposited, it does imply that it is formed after the micromover is released because to be called a MEMS the system has to function as a MEMS, before being released the micromover cannot function as a MEMS.....Besides in Speakman there is no importance associated to the timing of the formation of the thin film layer 1300. It would have been obvious for a person of ordinary skill in the art to form this thin film after releasing the micromover component when this better fits the processing flow of the device manufacturing process.

Appellant respectfully disagrees. As previously articulated, although an Examiner may suggest that the structure of a primary prior art reference *could* be modified, the mere fact that the prior art *could* be so modified does not make the modification obvious *unless the prior art suggested the desirability of the modification. Motivation coming from the appellant's own disclosure is not sufficient. In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (CAFC 1989). (Emphasis added.)

In case of the instant application, the Examiner admits that Speakman does not expressly disclose when the film 1300 is deposited. He then concludes that “it would have been obvious for a person of ordinary skill in the art to form this thin film after releasing the micromover component when this better fits the processing flow of the device manufacturing process”. Appellant asserts that since Speakman does not expressly disclose when the film 1300 is deposited, it is hindsight reasoning to argue that it would be obvious to form this thin film after releasing the micromover component simply because it “..better fits the processing flow of the device manufacturing process...”. Appellant herein asserts that the Examiner’s proposed desirability of the modification of Speakmen is motivated solely by the Appellant’s disclosure and therefore constitutes hindsight reasoning. This is clearly insufficient motivation to render the instant invention obvious under 35 U.S.C. §103(a). Therefore, independent claim 1 is patentable over Speakman under 35 U.S.C. §103(a).

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Since claims 2-11, 13-15 and 18 are dependent on claim 1, the above-articulated arguments with regard to independent claim 1 apply with equal force to claims 2-11, 13-15 and 18. Accordingly, claims 2-11, 13-15 and 18 should be allowed over the Examiner's cited reference.

**B. Rejection of Claims 9 and 10 under 35 U.S.C. §103(a) as being unpatentable over Speakman in view of Yao et al.**

Insofar as the Yao et al reference fails to correct the outlined deficiency of the Speakman reference, Appellant asserts that the Examiner's proposed combination of the Speakman reference and the Yao et al reference does not teach or suggest the limitations as recited in claims 9 and 10 of the present invention. Furthermore, since claims 9 and 10 are dependent on claim 1, the above-articulated arguments with regard to claim 1 apply with equal force to claims 9 and 10. Accordingly, claims 9 and 10 should be allowed over these references.

**C. Rejection of Claims 16 and 17 under 35 U.S.C. §103(a) as being unpatentable over Speakman in view of Jacobson et al.**

Insofar as the Jacobson et al reference fails to correct the outlined deficiency of the Speakman reference, Appellant asserts that the Examiner's proposed combination of the Speakman reference and the Jacobson et al reference does not teach or suggest the limitations as recited in claims 16 and 17 of the present invention. Furthermore, since claims 16 and 17 are dependent on claim 1, the above-articulated arguments with regard to claim 1 apply with equal force to claims 16 and 17. Accordingly, claims 16 and 17 should be allowed over these references.

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**CONCLUSION**

For the above reasons, Appellants respectfully submit that the cited references neither anticipate nor render obvious claims of the pending Application. The pending claims distinguish over the cited references, and therefore, Appellants respectfully submit that the rejections must be withdrawn, and respectfully request the Examiner be reversed and claims 1-18 be allowed.

Any inquiry regarding this Response should be directed to Wendell J. Jones at Telephone No. (408) 938-0980. In addition, all correspondence should continue to be directed to the following address:

IP Administration  
Legal Department, M/S 35  
HEWLETT-PACKARD COMPANY  
P.O. Box 272400  
Fort Collins, Colorado 80527-2400

Respectfully submitted,

Chen et al.

By their attorney,

Wendell J. Jones

Wendell J. Jones  
Reg. No. 45,961

Date: 1/22/07



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**CLAIMS APPENDIX**

1. (Original) A method of making a microelectromechanical system device comprising:  
releasing a micromover component; and  
coating the micromover component with a first self-aligned film after releasing the micromover component.
2. (Original) The method of claim 1, wherein the step of coating comprises selectively depositing a coating composition only on the micromover component.
3. (Original) The method of claim 1, wherein the film comprises at least one of a polymer, PMMA and an epoxy photoresist.
4. (Original) The method of claim 3, wherein the polymer is thermoplastic.
5. (Original) The method of claim 3, wherein the polymer is thermoset.
6. (Original) The method of claim 1, wherein coating the micromover component comprises adjusting a coating parameter to control the film thickness.
7. (Original) The method of claim 6, wherein adjusting a coating parameter comprises selecting a solid to solvent ratio.
8. (Original) The method of claim 6, wherein adjusting a coating parameter comprises selecting an amount of film material to deposit.
9. (Original) The method of claim 1, further comprising plasma treating a surface of the micromover component prior to coating.
10. (Original) The method of claim 9, further comprising applying an adhesion promoter to the micromover component after plasma treating.

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11. (Original) The method of claim 1, further comprising coating the micromover component with a second self-aligned film.
12. (Original) The method of claim 11, wherein the second self-aligned film comprises a different material from the first self-aligned film.
13. (Original) The method of claim 12, wherein one of the self-aligned films comprises a thermoplastic polymer and the other comprises a thermoset polymer.
14. (Original) The method of claim 12, wherein the first self-aligned film and the second self-aligned film have different hardness.
15. (Original) The method of claim 12, wherein the first self-aligned film and the second self-aligned film have different glass transition temperatures.
16. (Original) The method of claim 1, further comprising bonding a wafer having at least one contact probe or AFM tip opposite the self-aligned film.
17. (Original) The method of claim 16, further comprising fabricating a contact atomic resolution storage device.
18. (Original) The method of claim 1, wherein the first self-aligned film is adapted for data storage, anti-wear, anti-reflective, desiccant or an anti-stiction.
19. (Previously Withdrawn) A mass storage device comprising:
  - at least one micromover including a self-aligned film adapted to store data; and
  - at least one contact probe or AFM tip located opposite the at least one micromover and adapted to write in the self-aligned film.

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20. (Previously Withdrawn) The mass storage device of claim 19, wherein the self-aligned film comprises a polymer.
21. (Previously Withdrawn) The mass storage device of claim 20, wherein the polymer comprises at least one of thermoplastic, PMMA and an epoxy photoresist.
22. (Previously Withdrawn) The mass storage device of claim 20, wherein the polymer is thermoset.
23. (Previously Withdrawn) The mass storage device of claim 19, further comprising a plurality of self-aligned films.
24. (Previously Withdrawn) The mass storage device of claim 23, wherein the plurality of self-aligned films comprises at least two different film materials.
25. (Previously Withdrawn) The mass storage device of claim 24, wherein one of the self-aligned films comprises a thermoplastic polymer and the other comprises a thermoset polymer.
26. (Previously Withdrawn) The mass storage device of claim 24, wherein the at least two different film materials have different hardness.
27. (Previously Withdrawn) The mass storage device of claim 24, wherein the at least two different film materials have different glass transition temperatures.
28. (Previously Withdrawn) A mass storage device comprising:  
at least one means for storing data having at least one self-aligned film; and  
means for writing data in the at least one self-aligned film.
29. (Previously Withdrawn) The mass storage device of claim 28, further comprising a means for moving the means for storing data.

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30. (Previously Withdrawn) The mass storage device of claim 29, further comprising a means for reducing wear of the means for writing data.
31. (Previously Withdrawn) An integrated circuit comprising:  
at least one micromover having a self-aligned film adapted to store data;  
at least one contact probe or AFM tip located opposite the at least one micromover,  
the at least one contact probe or AFM tip adapted to write in the self-aligned film; and  
at least one circuit to control the movement of the at least one micromover.
32. (Previously Withdrawn) The integrated circuit of claim 31, wherein the integrated circuit comprises a contact atomic resolution storage device.
33. (Previously Withdrawn) A method of storing data comprising:  
moving a micromover having a self-aligned data storage film; and  
heating at least one contact probe or AFM tip to a first temperature to make an indentation in the self-aligned data storage film.
34. (Previously Withdrawn) The method of claim 33, further comprising repeating the steps of moving and heating a plurality times.
35. (Previously Withdrawn) The method of claim 34, further comprising erasing previously written data by heating the self-aligned data storage film to a second temperature to melt the film and remove the indentations.
36. (Previously Withdrawn) The method of claim 35, further comprising reusing the self-aligned data storage film by moving the micromover and heating at least one contact probe or AFM tip to the first temperature to make an indentation in the self-aligned data storage film.
37. (Previously Canceled) A method of making a semiconductor device comprising:  
fabricating at least one component on a substrate; and

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coating the at least one component with a first self-aligned polymer film.

38. (Previously Canceled) The method of claim 37, wherein the semiconductor device comprises at least one of a display, a bio-chip, a surface microelectromechanical system device and a bulk microelectromechanical system device.

39. (Previously Canceled) The method of claim 37, further comprising coating the at least one component with a second self-aligned film.

40. (Previously Canceled) The method of claim 39, wherein the second self-aligned film comprises a different material from the first self-aligned film.

41. (Previously Withdrawn) A semiconductor device comprising at least one component having a self-aligned polymer film thereon.

42. (Previously Withdrawn) The semiconductor device of claim 41, wherein the semiconductor device comprises one of a display, a bio-chip, a surface microelectromechanical system device and a bulk microelectromechanical system device.

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**EVIDENCE APPENDIX**

None.

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**RELATED PROCEEDINGS APPENDIX**

None.